

In re Patent Application of:
RAYNOR
Serial No. **10/786,878**
Filing Date: **FEBRUARY 25, 2004**

REMARKS

The Examiner is thanked for the careful examination of the present application. Claims 27-35 have been canceled in response to the restriction requirement and without prejudice to Applicant's right to file a divisional application directed to the subject matter thereof. Independent Claims 11 and 20 have been amended to more clearly define the invention over the cited prior art as described in greater detail below.

I. The Amended Claims

Independent Claim 11 is directed to an image sensing structure including at least one photodiode that, in turn, comprises a layer of a first conductivity type, a well of a second conductivity type in the layer, with the well defining a collection node, and an isolation trench at least partially bounding an upper portion of the well. Moreover, Claim 1 has been amended to further recite that the well has opposing sides, and that the isolation trench at least partially bounds the upper portion of the well at the opposing sides thereof. These amendments are clearly supported by the originally filed application and can be seen in FIGS. 3-5, for example. Independent Claim 20 has been similarly amended.

II. The Claims Are Patentable

The Examiner rejected independent Claims 11 and 20 over the Rhodes patent. The Rhodes patent discloses spaced apart field oxide regions (FOX) **114** on a P-well **20** and with entire pixels formed between adjacent field oxide regions (FIG. 8). This is quite different than the claimed invention

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wherein the isolation trench at least partially bounds the upper portion of the well at the opposing sides thereof.

Because the isolation trench is provided on opposing sides of the photodiode collection node in the claimed invention, the implantation of the well can be very accurately controlled. This may advantageously provide a variation distance on both sides of the well being greatly reduced as compared to the variation distance on both sides of the well as in the prior art as explained in Applicant's specification. As also noted in Applicant's specification, the claimed invention provides better matching between the pixels that, in turn, reduces fixed pattern noise and photo response non-uniformity.

The Rhodes patent discloses that the field oxide region **114** only bounds one side of the doped region **26** as seen in FIG. 8, for example. Accordingly, an implant of the region **26** of Rhodes could not be accurately controlled. Rhodes teaches bounding of the region **26** on only one side thereof, and, thus, teaches away from the claimed invention wherein the isolation trench at least partially bounds the upper portion of the well at the opposing sides thereof.

In view of the patentability of independent Claims 11 and 20, it is submitted that their dependent claims, that include yet further distinguishing features, are also patentable. Accordingly, these dependent claims need no further discussion herein.

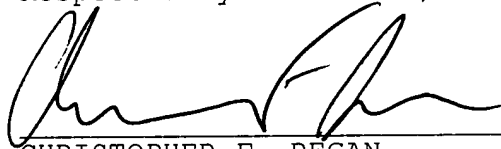
III. CONCLUSION

In view of the amendments to the claims and the arguments provided herein, it is submitted that all the claims

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are patentable. Accordingly, a Notice of Allowance is requested in due course. Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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